be assumed, but only that previous members of the family showing this syndrome have been buried even beyond the knowledge and memory of those still alive. Sufferers from this syndrome are of course unlikely to marry, and even if they do so are unlikely to have children—a factor which of itself curtails the passing on of the defective gene except as a latent recessive type.

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Medical Memoranda

A Fatal Case of Solanine Poisoning

Of the *Solanaceae, A. belladonna* (deadly nightshade) has long been recognized as having very poisonous properties owing to the high content of atropine in the plant. The commoner members of the nightshade genus—*S. dulcamara* (woody nightshade) and *S. nigrum* (black nightshade)—are generally regarded as being harmless, although the alkaloid solanine has been recovered from the berries of these plants and has been shown to have toxic properties in experimental animals and to a less extent in human beings. We can trace only one authenticated case of death following ingestion of the red berries of the woody nightshade and one fatal case of black nightshade poisoning (Taylor, 1875).

CASE RECORD

A female child aged 9 years was admitted to hospital on the evening of Aug. 13, 1948, suffering from vomiting, abdominal pain, and distressed breathing. Her home was on the outskirts of a town and she was apparently in the habit of eating berries from hedges and from the embankment of a disused railway near her home. She had eaten berries on several occasions during recent weeks, the last occasion being three days before admission. The following day she had felt unwell but had improved. On the day before admission she had been taken ill with vomiting and had vomited " coffee-ground " material four times during the five hours before admission.

The child responded weakly to questioning and complained only of abdominal pain and thirst. She looked exhausted, the skin was pallid and dry, the expression anxious. There were slight restless movements of arms and head. She was not delirious. A feature which remained marked throughout was dyspnoea. Inspiration was short and gasping; expiration was prolonged and active and accompanied by a sigh. The respiratory rate was 32 per minute.

The pupils were of normal size and reacted to light. Although the child was dehydrated the tongue was moist. Examination of chest and abdomen revealed nothing of significance. The extremities were warm. There was neither paraesthesia nor paralysis. Temperature 96.4° F. (35.8° C.), pulse rate 140 per minute, blood pressure 120/88.

A provisional diagnosis of vegetable irritant poisoning with central effect on the nervous system was made, and treatment was immediately instituted. This included stomach lavage, soap and water enemas, nikethamide 1.7 ml. hourly, and latterly oxygen. Fluids were given by mouth and per rectum. Some improvement in her general condition was maintained for 24 hours, but she later became weaker and more cyanosed and her respirations became very feeble. Death occurred in the morning of Aug. 15, 1948.

A post-mortem examination was carried out two hours after death. The main feature was an acute inflammation of the mucosa of the stomach and intestines, the inflammation decreasing in intensity towards the distal coils of small intestine and caecum. There were small haemorrhages in the mucosa of stomach and jejunum. The stomach contained about 1 pint (568 ml.) of dark brown fluid, and dark greenish-brown semi-solid material was present in the upper coils of jejunum. The bowel contents decreased in amount and became paler towards the distal end of the small intestine. The contents of the colon were normal in appearance. Small fragments of the skin of a berry were found microscopically. The rectum was empty. Other abdominal organs appeared healthy. Thoracic organs, with the exception of the lungs, which were congested and oedematous, appeared healthy. The brain was normal in appearance. Microscopically the liver showed moderate fatty infiltration and necrosis.

The post-mortem findings were regarded as being consistent with death from respiratory failure following the ingestion by mouth of some poisonous substance, and specimens of stomach and intestinal contents and liver were submitted for analysis. No alkaloid was found in the liver by the normal Stas-Otto process. A special search was made for solanine, and from about one-third of the liver 7 mg. of crude alkaloid was isolated, which on recrystallization from alcohol gave a product giving characteristic tests for the solanine complex.

A search at the place where the child played revealed the presence of masses of woody nightshade entangled with blackberries. The child's symptoms, the finding of solanine in this organ and the presence of much woody nightshade where the child played provide evidence that death was almost certainly due to poisoning by *Solanum dulcamara*.

DISCUSSION

Fatal cases of solanine poisoning are very rare, and although much work has been done on the potato as a source of the poison very little appears in the literature concerning the other two common sources, *Solanum dulcamara* and *Solanum nigrum*. It is known that the potato varies greatly in solanine content with the season of growth. Abnormally wet summers appear to favour high alkaloidal content. It appears possible that *Solanum dulcamara* may be subject to similar variations and that this abnormally wet summer may have favoured high toxicity of the berries. Recorded cases suggest that some individuals may be abnormally sensitive to solanine.

According to Reil (1857) solanine destroys life by producing paralysis of the muscles of the chest. It is a slow-acting poison, and so far as we know has not yet been isolated from the vomit or stomach washings of suspected cases. It differs from atropine (deadly nightshade) and hyoscyamus (henbane) in not producing stupor or delirium, dilatation of the pupils, sphincter paralysis, or pyrexia.

Plants of the genus *Solanum* can be identified only by a botanical examination of the leaves and berries. The following brief accounts are extracted from Bentham and Hooker (1945).

" (1) *Solanum dulcamara*. Synonyms: Bittersweet, woody nightshade, felonwort, violet bloom, scarlet berry. Found commonly in hedges and thickets in moist shady situations all over Europe except the extreme north. Common in England and Ireland. Rare in Scotland. Stem shrubby at base, with climbing or straggling branches, often many feet in length. Leaves stalked, ovate or ovate-lanceolate, two or three inches long, usually broadly cordate at the base and entire, but sometimes with an additional lobe or segment on each side. Flowers rather small, purple or blue with yellow anthers, in loose cymes, on lateral peduncles shorter than the leaves. Flowers in summer. Berries small, globular or ovoid and red when mature."

" (2) *Solanum nigrum*. Synonym: black nightshade. One of the most widely spread weeds. Common in England but local in Scotland and Ireland. An erect annual or biennial with very spreading branches, about a foot high. In Britain usually glabrous. Leaves stalked, ovate with coarse angular teeth. Flowers small and white in little cymes almost contracted into umbels on short, lateral peduncles. Berries small, globular, black."

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Five Cases of Belladonna Poisoning

On Sept. 2, 1948, at 10.30 a.m., three children, Rosemary and Elizabeth, aged 7, and John, aged 8, were admitted to St. Mary's Hospital, Portsmouth, with the statement that during the night they had become delirious, lost the use of their legs, and could not see. All three were extremely restless on admission, twisting about, plucking at the bedclothes, and constantly grimacing. John and Rosemary were extremely talkative and obviously hallucinated; their speech was a little slurred. Elizabeth appeared to have some photophobia and lay with her head buried in the pillow, fiercely resisting any interference. All three children had hot, dry skins and a marked malar flush. The lips were dry and fissured, the pupils widely dilated and inactive to light. They had rapid pulses, 120–130, but normal temperatures and respiratory rates. The highest B.P. recorded was John's, 138/80 mm. Hg. Lying in bed there was no obvious muscular incoordination, though they continuously executed purposeless movements. All deep reflexes were brisk. The following facts were elicited from the mother.

The patients and another brother had gone out to play in the park the previous afternoon. They returned home about 5 p.m. stating